

6.2 notes:

Double Blind: - individuals don't know
which trt. they are getting
- evaluators don't know
which trt. indiv. are getting

Example:

direct contact
w/ indiv.

*reduce bias

Ex: aspirin vs. placebo

*master list

*Single blind

Non-adherers:

- don't follow trt.

Ex: diet, cheated

Dropouts:

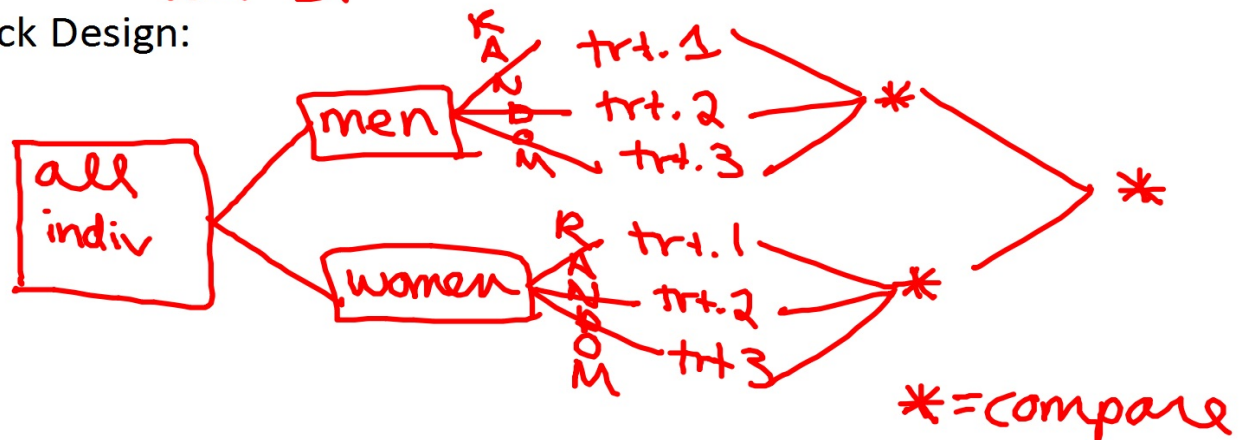
- happens more often in longer expt, study

BLOCK DESIGN:

Block = group of indiv. that have a similar characteristic (lurking var.) Ex: gender, age, diet, ex.

It is used to...
reduce lurking var's.

Block Design:

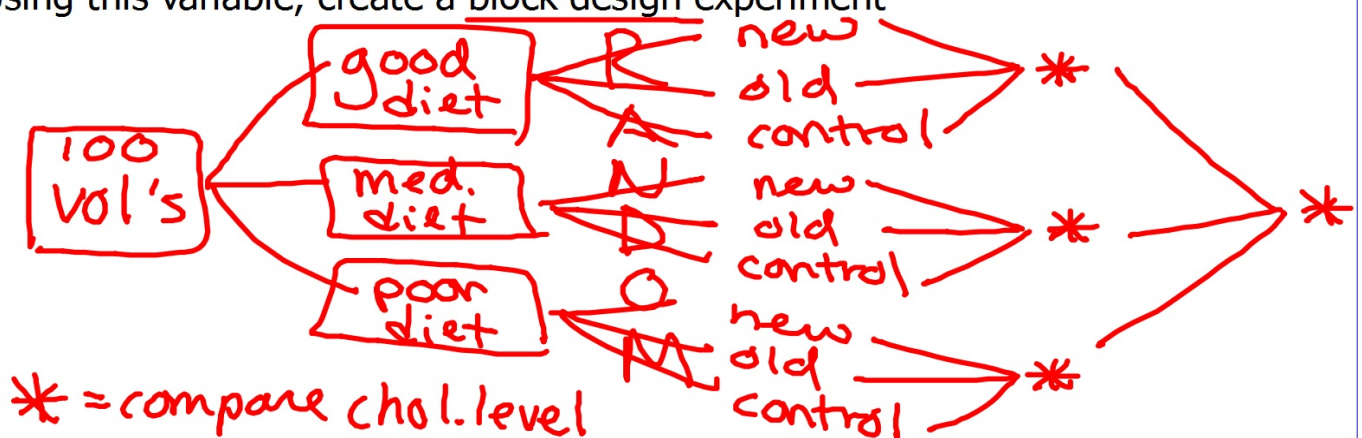


Example: Let's go back to the experiment on people with high cholesterol. We wanted to test the effect of new and old drug. We also thought a control group would be useful. There are 100 volunteers with high cholesterol that are currently not on meds that are available.

What are some lurking variables in this experiment?

gender, genetics, age, wt, diet + ex

Using this variable, create a block design experiment



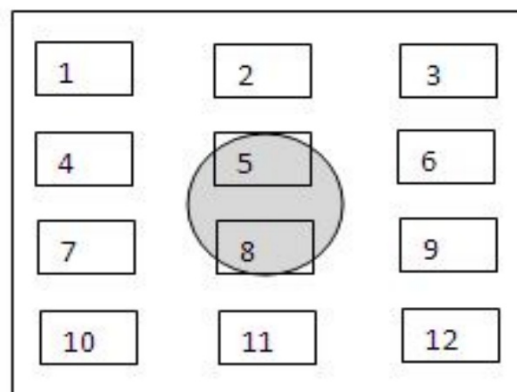
Could this experiment be done double-blind?

Example 2: An experiment to determine the effect of a fertilizer on the growth of grass is to be conducted in a controlled environment. Identical soil and seeds are placed in plots in the lab. Once the grass starts growing, some plots are to be treated with the new fertilizer, while the rest receive no fertilizer. All other conditions regarding water, temperature, etc. are identical, except for the proximity of the plots to the single light source in the room. The figure below illustrates this.

high light
#5, 8

mod light
#2, 4, 6, 7, 9, 11

low light
#1, 3, 10, 12

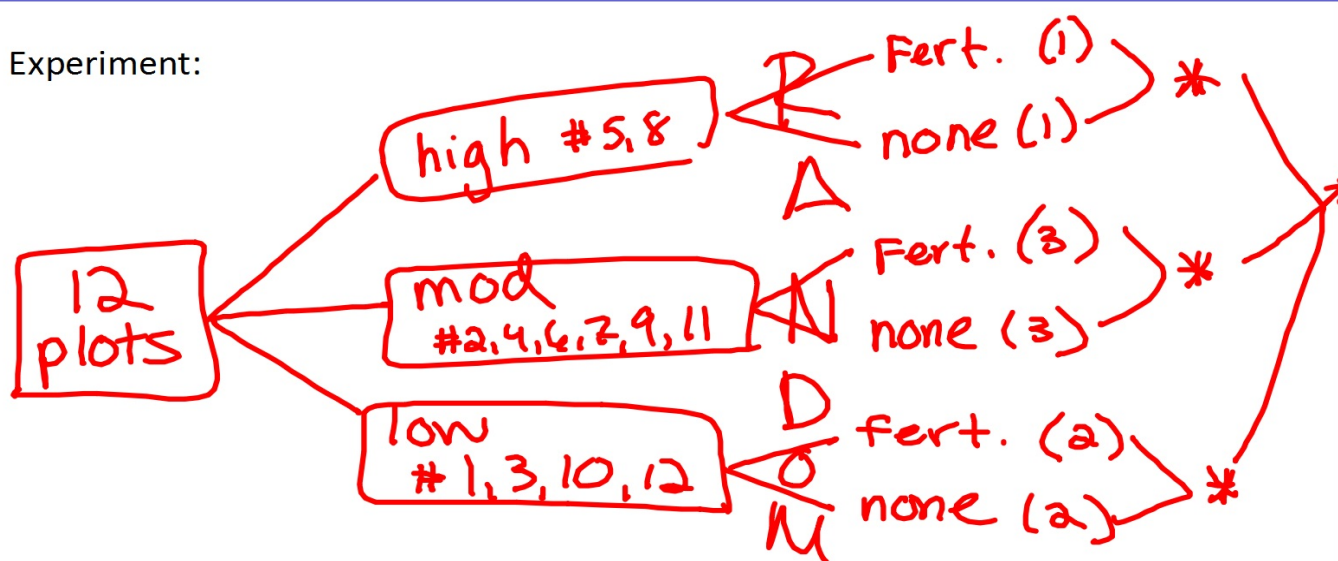


What is the lurking variable in this experiment?

the light

Using this, design a block design experiment.

Experiment:



* Warm Up: Examples #3 and 4 in notes from yesterday (6.2 notes)

* Have HW out on desk

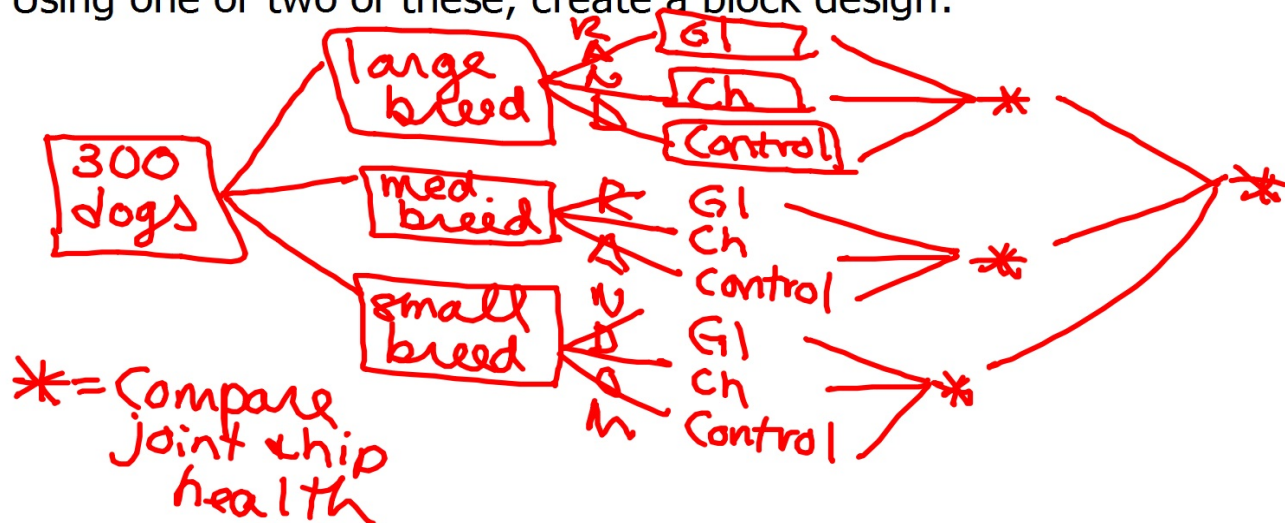
* Extra credit if you want to put the answer to one of the HW problems on the board

Example 3: Let's go back to the dog example from before. We wanted to see if the drugs glucosamine and chondroitin had an effect on joint and hip health in dogs. We added a control group to the experiment too. We had 300 dogs (various breeds) from numerous clinics.

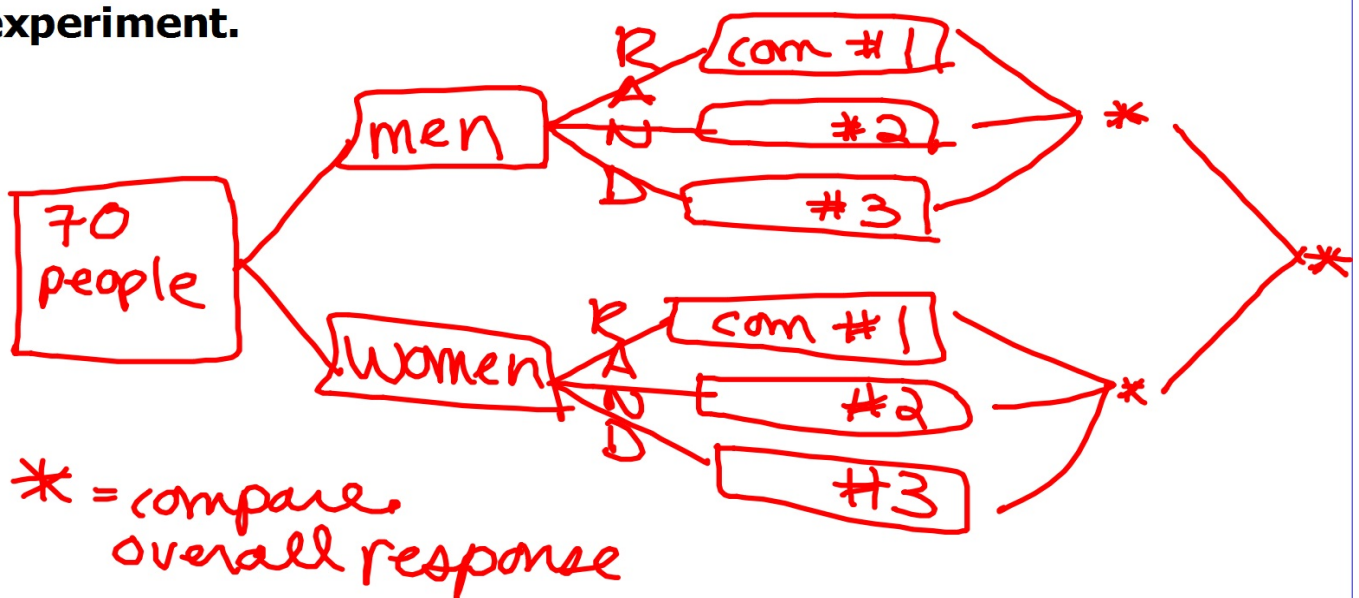
What are some lurking variables in this study?

age, breed, size, exercise, etc.

Using one or two of these, create a block design:



Example 4: Men and women respond differently to advertising. An experiment to compare the effectiveness of 3 TV commercials for the same product will want to look separately at the reactions of the different genders, and assess their overall responses to the ads. There are 70 people available for the experiment. **Design a block design experiment.**

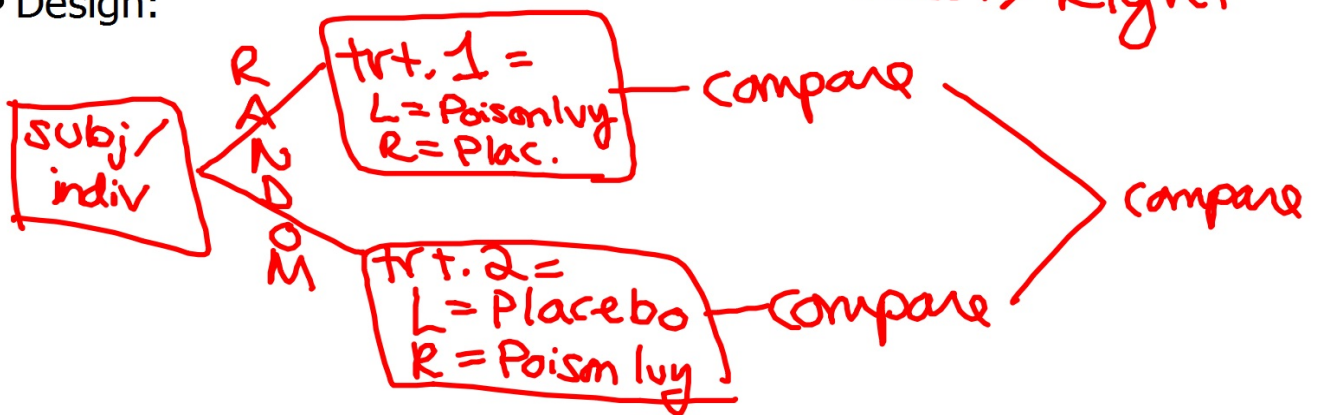


Matched Pairs Design-

- Only... ^{usually} 2 treatments
- Every individual ... gets both treatments
- Where is the randomization if everyone gets both treatments???

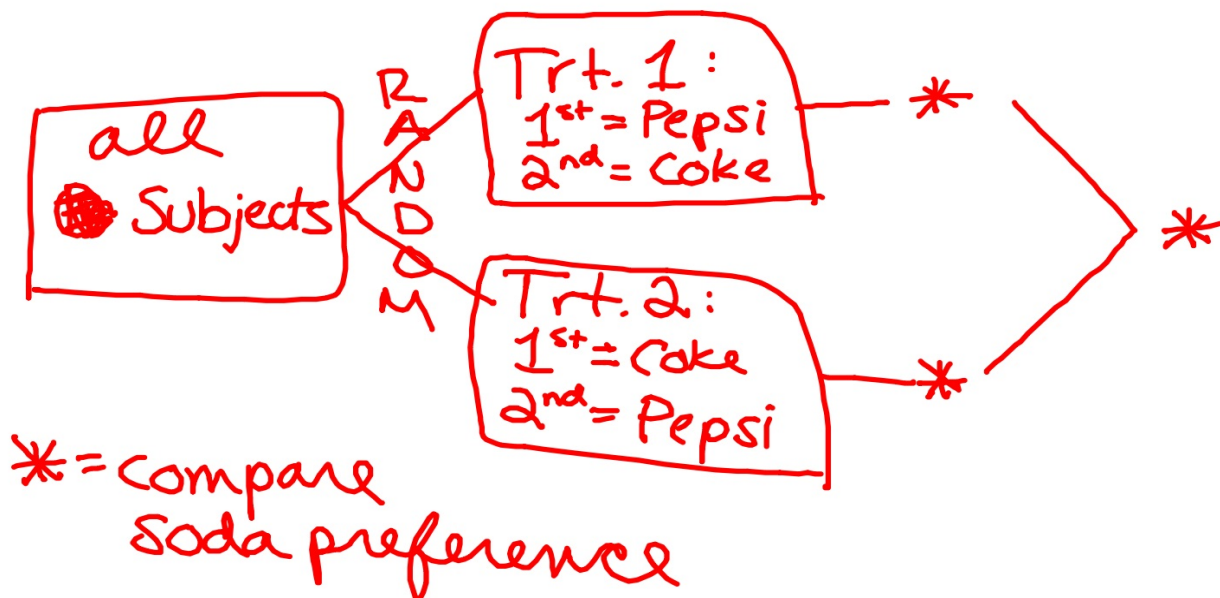
which trt. they get 1st/2nd
Left/Right

- Design:



Example: Taste Test

We want to do a Coke/Pepsi Taste test. Design this matched pairs experiment. 1 2

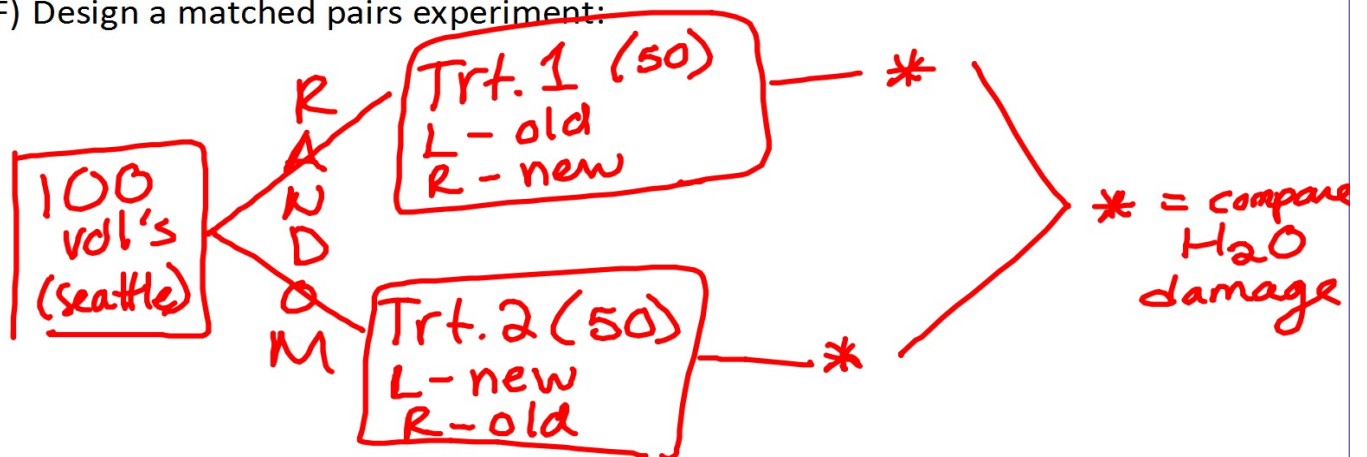


Example 2: A manufacturer of boots plans to conduct an experiment to compare a new method of waterproofing to the current method. The appearance of the boots is not changed by either waterproofing method. The company recruits 100 volunteers in Seattle (where it rains a lot) to wear the boots as they normally would for 6 months. At the end of the 6 months, the boots will be returned to the company to be evaluated for water damage.

- (A) What is the explanatory variable? *waterproofing methods*
- (B) What are the 2 treatments? *new method vs. old method*
- (C) What is the response variable? *water damage*
- (D) Who are the individuals/subjects? *100 vol's from Seattle*
- (E) How could each individual have BOTH treatments applied to them?

Example 2 continued:

(F) Design a matched pairs experiment:



(G) Could your experiment be double-blind? Explain why or why not.

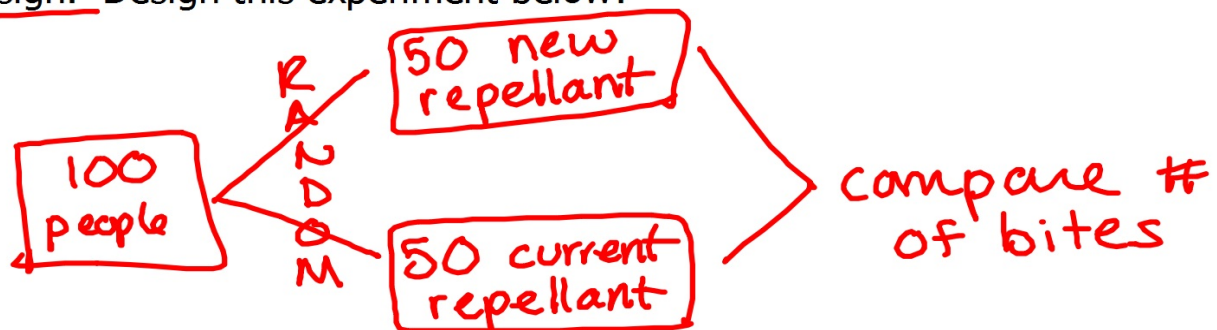
Yes.

Example 3: Scientists are in search of a mosquito repellent that is more effective. To test the effectiveness of the new compound versus the current compound, scientists have randomly selected 100 people to participate in their experiment. 100 bins, each with an equal number of mosquitoes in them, are available for the experiment. After a repellent is applied to a subject's arm, they will insert their forearm into a bin for 1 minute. The number of mosquito bites on the arm after 1 min will be counted.

- (A) What is the explanatory variable? mosquito repellent
- (B) What are the treatments? new and current repellent
- (C) What is the response variable? # of bites on the arms
- (D) Who are the subjects/individuals? 100 people

Example 3 continued:

(E) Suppose this study is to be conducted using a completely randomized design. Design this experiment below:



(F) Suppose this study is to be conducted using a matched pairs design. How could each individual have BOTH treatments applied to them? **one repellent on one arm, one on the other**

(G) Design this experiment below:

Matched pairs design:

